

Amendment Under 37 C.F.R. §1.111  
Serial No. 10/816,958  
Attorney Docket No. 042323

### **REMARKS**

Claims 1-15 are pending in the above-identified application. Claim 1 is amended. No new subject matter is added. It is respectfully submitted that this Amendment is fully responsive to the Office Action dated July 19, 2005.

Applicants amend the specification (i.e., paragraph beginning on page 10, line 21) to correct a misspelling.

Claims 1 and 7 were rejected under 35 U.S.C. §102(e) as being anticipated by *Nabeya et al.* (2004/0129569 A1). Applicants amend claim 1 for clarification purposes. Applicants disagree with the Examiner's reasons for rejection because anticipation requires the presence in a single prior art reference the disclosure of each and every element of the claimed invention. Here, for example, the cited reference *Nabeya et al.*, fails to disclose the following step for fabricating a semiconductor device: *concurrently spraying nitrogen gas and water on the surface of the interconnection layer buried in the opening*. [claim 1]. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 1.

In *Nabeya et al.*, a substrate W having a copper film 6 as a conductive film in the surface is attracted and held by the substrate holder 442 such that the surface of the substrate W in which the conductive film (copper film 6) is formed faces downward (in [0302] and FIG. 44). The substrate W is attracted to the lower surface of the chucking plate 504 of the substrate holder 442 by vacuum suction through through-holes 520.

The injection of nitrogen gas and water disclosed in [0307] of *Nabeya et al.*, which the

Examiner refers to, is performed for releasing the substrate W from the chucking plate 504. (e.g., a mixture of compressed air or nitrogen and pure water is jetted from the through-holes 520 to release the substrate W.) At this time, the substrate W is held by the chucking plate 504 of the substrate holder 442 such that the surface of the substrate W in which the conductive film (copper film 6) is formed faces downward (in [0302]). Therefore, in *Nabeya et al.*, the surface of the substrate W facing upward, to which the nitrogen gas and water are jetted, has no interconnection layer (copper film 6) thereon. Thus, no interconnection layer can be formed on the surface of the substrate W to which nitrogen gas and water are jetted since the surface is in contact with the chucking plate 504 of the substrate holder 442.

As described above, *Nabeya et al.* only discloses the injection of nitrogen gas and water to the surface of the substrate on which no interconnection layer is formed so as to release the substrate from the substrate holder. It is clear that *Nabeya et al.* never discloses nor suggests the spraying of nitrogen gas and water on the surface of the interconnection layer.

In the present invention, nitrogen gas and water are concurrently sprayed on the surface of the interconnection layer. [claim 1]. By spraying nitrogen gas and water in such a way, for example, the present invention produces the technical effect that the rate of generating the conduction defects of the interconnection layer is suppressed low and the stress-migration resistance of the interconnection layer is increased, due to the behaviors of nitrogen gas and water. Whereas, in *Nabeya et al.* the injection of nitrogen gas and water is performed so as to release the substrate from the substrate holder and they are injected to the substrate surface on

which no interconnection layer is formed as described above. The technique disclosed in *Nabeya et al.* does not decrease the conduction defects or increase the stress-migration resistance.

Claim 7 is dependent from claim 1. Therefore, in view of the remarks above, Applicants respectfully request that the Examiner withdraw the rejection of claims 1 and 7.

Claims 2, 3, 8, 9, 12 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Nabeya et al.* in view of *Ngo et al.* (6,146,988). Claims 5 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Nabeya et al.* in view of *Ngo et al.* and further in view of *Li et al.* (2004/0219795 41). Claims 4, 10, 11, 14 and 15 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Nabeya et al.* in view of *Li et al.*

Claims 2-6 and 8-15 depend from claim 1. As described above, claim 1 is not anticipated by *Nabeya et al.* Therefore, even if *Nabeya et al.* were further combined with *Ngo et al.* or *Li et al.*, it is clear that the present invention according to these dependent claims would not have been obvious to one of ordinary skill in the art at the time the invention was made. Accordingly, Applicants respectfully request that the Examiner withdraw the obviousness rejections of claims 2-6 and 8-15.

For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned attorney.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,  
**WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP**

A handwritten signature in black ink, appearing to read "Darrin A. Auito".

Darrin A. Auito  
Attorney for Applicants  
Registration No. 56,024  
Telephone: (202) 822-1100  
Facsimile: (202) 822-1111

DAA/meu